

Amendment and Response

Applicant: N. Lee Rhodes

Serial No.: 09/919,149

Filed: July 31, 2001

Docket No.: 10013112-1/H300.177.101

Title: NETWORK USAGE ANALYSIS SYSTEM HAVING DYNAMIC STATISTICAL DATA
DISTRIBUTION SYSTEM AND METHOD

REMARKS

The following remarks are made in response to the Office Action mailed March 18, 2005. Claims 1-22 were rejected. With this Response, claims 1, 16, 20, and 21 have been amended. Claims 1-22 remain pending in the application and are presented for reconsideration and allowance.

Claim Rejections under 35 U.S.C. § 103

Claims 1, 2, 4-8, 16-18, and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Friedrich et al. U.S. Patent No. 5,958,009 ("Friedrich") in further view of Marshall et al. "Statistics of Mixed Data Traffic on a Local Area Network" ("Marshall").

Applicant submits that Friedrich and Marshall, either alone, or in combination, fail to teach or suggest the invention of amended independent claims 1, 16, and 20. Amended independent claim 1 recites a method for substantially real-time analyzing a stream of data comprising determining a data distribution representative of the stream of data, including creating data bins on an as needed basis based on the stream of data. Amended independent claim 16 recites a system for analyzing a stream of data comprising determining a data distribution representative of the stream of data, including configured to create data bins on an as needed basis based on the stream of data. Amended independent claim 20 recites a computer-readable medium having computer executable instructions for performing a method for substantially real-time analyzing of a stream of data comprising determining a data distribution representative of the stream of data, including creating data bins on an as needed basis based on the stream of data.

Friedrich discloses a measurement system and method of instrumenting a computer program for efficiently monitoring the quality of service in a distributed processing environment. A plurality of interconnected network nodes in a computer system with an application process operating on each network node is provided. At least one intelligent sensor is associated with each application process. Each intelligent sensor selectively collects data about at least one of the network nodes upon which the associated application process operates. An observer is associated with each application process and filters out unchanged and zero values from the data collected by the at least one intelligent sensor. A collector is

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logically associated with each network node. The intervalized collected data is asynchronously received into the collector periodically pushed from the observer. An analyzer is associated with the distributor processing environment and correlates the intervalized collected data. The intervalized collected data is asynchronously received into the analyzer periodically pushed from the collector. (Abstract).

Marshall discloses analyzing data traffic on a DATAKIT™ Virtual Circuit Switch network. Comparable fractions of the data traffic are generated by terminal to host calls, by indirect logins, by interactive remote command executions, and by host to host file transfers. Histograms are displayed representing the distributions of interarrival times and call lengths associated with the various types of calls, and the distributions of transmission bursts and individual calls. Typical distributions are characterized by their means and coefficients of variation. A model is proposed for time-sharing traffic that depends on a relatively small number of parameters and statistical distributions. (Abstract).

Friedrich and Marshall, either alone, or in combination, fail to teach or suggest **creating data bins on an as needed basis based on the stream of data**. Friedrich merely states that the analyzer 48 performs complex statistical calculations, such as computing moments and histograms, but does not disclose creating data bins on an as needed basis based on the stream of data. (Column 8, lines 47-48). Marshall discloses histograms, but the histograms were generated after collecting all the data. Marshall does not disclose creating data bins on an as needed basis based on the stream of data.

In view of the above, a person having ordinary skill in the art could not combine Friedrich and Marshall and arrive at the invention of amended independent claims 1, 16, and 20. Dependent claims 2 and 4-8 depend directly or indirectly upon independent claim 1. Dependent claims 17 and 18 depend directly or indirectly upon independent claim 16. Accordingly, Applicant submits dependent claims 2, 4-8, 17, and 18 are also allowable over the art of record.

Further, Friedrich and Marshall, either alone, or in combination, fail to teach or suggest **creating data bins having exponentially increasing sizes including indexing the bins using a set of keys determined from a function of the logarithm of the data and determining a set of exponentially increasing intervals to define the data bin sizes**.

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(Claims 2 and 17). Friedrich and Marshall, either alone, or in combination, also fail to teach or suggest **defining the stream of data as having an unknown lowest value and an unknown upper value.** (Claim 7). Therefore, Applicant respectfully submits that the above-rejection of claims 1, 2, 4-8, 16-18, and 20 under 35 U.S.C. § 103(a) should be withdrawn.

Claims 9, 19, and 21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Friedrich in view of Marshall as applied to claims 8 and 16 above, and further in view of Official Notice.

Dependent claim 9 depends indirectly upon independent claim 1. Dependent claim 19 depends directly upon independent claim 16. Accordingly, Applicant submits that dependent claims 9 and 19 are also allowable over the art of record. Amended independent claim 21 recites a method for substantially real-time analyzing of a stream of data comprising determining a data distribution representative of the stream of data, including creating data bins on an as needed basis based on the stream of data. For the reasons previously described above with respect to claims 1, 16, and 20, Friedrich and Marshall, either alone, or in combination, fail to teach or suggest **creating data bins on an as needed basis based on the stream of data.** In view of the above, a person having ordinary skill in the art could not combine Friedrich, Marshall, and Official Notice and arrive at the invention of amended independent claim 21.

In addition, since Friedrich and Marshall do not teach or suggest each and every limitation of claims 9, 19, and 21, the Examiner is relying on official notice. However, as indicated in the Manual of Patent Examining Procedure, “[o]fficial notice unsupported by documentary evidence should only be taken by the Examiner where the facts asserted to be well-known, or to be common knowledge in the art are capable of instant and unquestionable demonstration as being well-known.” MPEP § 2144.03(A). “It would not be appropriate for the Examiner to take official notice of facts without citing a prior art reference where the facts asserted to be well-known are not capable of instant and unquestionable demonstration as being well-known.” *Id.* (Emphasis in original). The limitations that the Examiner has acknowledged are not explicitly taught or suggested by Friedrich and Marshall are not well-known facts that are capable of instant and unquestionable demonstration as being well-known, and it would be inappropriate to simply rely on official notice in this case. Applicant

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respectfully requests in accordance with MPEP § 2144.03 that the Examiner cite a reference(s) to teach the further limitations of claims 9, 19, and 21. In view of the above, Applicant respectfully submits that the above-rejections of claims 9, 19, and 21 under 35 U.S.C. § 103(a) should be withdrawn.

Claim 3 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Friedrich in view of Marshall as applied to claims 1 and 16 above, and further in view of Wright "A Simple Hash Table Implementation" ("Wright").

Dependent claim 3 depends indirectly upon independent claim 1. Accordingly, Applicant submits dependent claim 3 is also allowable over the art of record. In addition, Friedrich, Marshall, and Write, either alone, or in combination, fail to teach or suggest **defining a resolution factor as a number of data bins desired per power of the chosen logarithm base; and using the resolution factor to determine the set of exponentially increasing intervals.** The Examiner submits that Wright discloses a means for indexing an item in a data structure using a key determined from a logarithmic function at page 2, line 2 of the code. Further, implying that the resolution factor is already known, which determines the set of intervals. (Office Action, page 6). Page 2, line 2 of the code in Wright is referring to figuring out how many characters are in an integer, the correct answer being four on an I386, but the equation is given to be more cross-platform. (Bottom of page 1, top of page 2 comment on code). Wright is not disclosing defining a resolution factor as a number of data bins desired per power of the chosen logarithm base; and using the resolution factor to determine the set of exponentially increasing intervals.

In addition, Wright relates to a simple hash table implementation, while the current application relates to real-time analyzing of a stream of data. Hash table implementations are not related to the current invention. Further, the Wright reference teaches away from the current invention. The Wright reference states that to effectively use a Hash table, you need to know approximately how many data items you will have (See page 1, second paragraph). In the current invention, the number of data items to be allocated to the data bins is unknown. For at least these reasons, a person having ordinary skill in the art could not combine Friedrich and Marshall with Wright and arrive at the invention of dependent claim 3.

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Therefore, Applicant respectfully submits that the above-rejection of claim 3 under 35 U.S.C. § 103(a) should be withdrawn.

Claims 10-15 and 22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Friedrich, Marshall, and Official Notice as applied to claim 9 above, and further in view of Wright. Dependent claims 10-15 depend directly or indirectly upon independent claim 1. Dependent claim 22 depends directly or indirectly upon independent claim 21. Accordingly, Applicant submits dependent claims 10-15 and 22 are also allowable over the art of record.

In addition, Friedrich, Marshall, Official Notice, and Write, either alone, or in combination, fail to teach or suggest **computing a bin key associated with a data value; defining an array index having an array of index values wherein each array index value is associated with the data bin; determine the data bin associated with the data value using the array index and bin key (claim 10); wherein if a data bin cannot be determined, extending the array structure to accommodate the data value (claim 12); indexing the bins using a set of keys (claim 13); defining the array structure as a tree array structure (claim 14); allocating a data value in the tree array structure including determining a data bin for the data value, and if a data bin does not exist creating a data bin (claim 15); and defining the array structure as a tree array structure, wherein allocating a data value in the tree array structure includes determining a data bin for the data value, and if a data bin does not exist, creating a data bin (claim 22).**

CONCLUSION

In view of the above, Applicant respectfully submits that pending claims 1-22 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 1-22 is respectfully requested.

Applicants hereby authorize the Commissioner for Patents to charge Deposit Account No. 08-2025 the amount of \$200.00 to cover fees as set forth under 37 C.F.R. 1.16(h)(i).

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The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

Any inquiry regarding this Amendment and Response should be directed to either William J. Streeter at Telephone No. (970) 898-3886, Facsimile No. (970) 898-7247 or Steven E. Dicke at Telephone No. (612) 573-2002, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

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Respectfully submitted,

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CERTIFICATE UNDER 37 C.F.R. 1.8: The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope address to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 17 day of June, 2005.

By Steven E. Dicke
Name: Steven E. Dicke